NOTES ON SEVERAL CASES OF BERIBERI OCCURRING AMONGST BRITISH TROOPS DURING AND AFTER A VOYAGE FROM INDIA TO FRANCE.

By Major J. E. M. Boyd, M.C.
Royal Army Medical Corps.

Although these cases occurred some time ago, it is thought that perhaps they may prove of interest to readers of the Journal, and perhaps other officers of the Corps may be able to describe similar cases from other ships.

On August 27, 1914, two battalions of British Infantry, the 1st Manchester Regiment from Jullundur and the 1st Connaught Rangers from Ferozepore, embarked at Karachi; on the S.S. "Edavana," owned by the British India Line, for a voyage of indefinite length and for an unknown destination.

The ship was licensed to carry 1,272 natives for short voyages, from port to port, but it was arranged that over 2,000 men should be packed into her, in hot weather, for what might prove to be a long voyage.

The actual strength on board being: officers, 31; other ranks, 1,765; S. and T. natives, 76; crew, 147; a total of 2,019 in all.

As there were only the two regimental medical officers, Captain O. D. K. Seaver and myself, on board, it fell to my lot to hold the position of senior medical officer to the ship.

It may be well here to give a description of the conditions existing on the ship, shortly after the embarkation of the troops.

The after-deck was filled with stalls for officers' chargers, and machine-gun mules; in addition, there were thirty head of cattle and 400 sheep, with a few pens of fowls and ducks for use in the saloon. On referring to my diary, I find the following remarks concerning the live stock.

"Several of the cattle are very old, debilitated and quite unsuitable for food, as they consist chiefly of skin and bone. The sheep are in a slightly better condition. These cattle take up a considerable amount of deck space, which might be better used for the accommodation of the troops. These cattle together with the horses, mules and fowls fill up the whole of the after-deck from the end of the saloon deck to the stern."

When the men turned in there was a great deal of confusion, owing to lack of space, men were lying everywhere, and next morning, I personally saw one man lying in a sheep pen, clad only in khaki "shorts," a sheep was asleep with its head on his chest and another man was sleeping with his head on the sheep's back.

The usual stores, as carried by transports were taken on board, packed in cases and sacks and consisted of thirty days' sea rations plus fifty per cent; thirty days' land rations plus fifty per cent. Bread was baked daily by the men of the S. and T. Corps, and after the latter had recovered from sea sickness, was ample and well cooked. Many sacks of onions were carried, but these later became bad, and on September 9, whilst in the Red Sea, 7,000 lb. of these were condemned and thrown overboard as unfit for human food.

Water was carried in tanks and could also be distilled from the engines, about 2,000 gallons a day being available from this source.

The general cleanliness of the ship, when the troops embarked, was good.
Washing places were ample and baths were arranged for the men by fixing up the usual "sail baths."

In the after-part latrines were sufficient, but in the fore-part there were only seven latrine seats for the battalion, urinals were non-existent but were put up as soon as possible, together with more latrines in the fore-part of the ship.

After consulting Captain Seaver, I reported to the officer commanding the troops, that in our opinion the ship was overcrowded and that this overcrowding was likely to cause sickness amongst the men; both he and the Captain of the ship agreed with us, and a message was sent ashore that "owing to the overcrowding of the ships, the senior medical officer declined to be held responsible for the health of the troops on board."

The Captain of the ship did everything he could to make the troops comfortable, even allowing them to sleep on the boat deck, but later this deck had to be used for infectious cases, such as ring-worm, scabies and venereal.

On the morning of August 28, a "Board of Survey" was held by the Embarkation Authorities, and it was finally decided to remove 120 of the sheep and a machine-gun section of sixteen men, who were sent on board the S.S. "Sangola."

This did little to relieve the existing overcrowding, and as the officer commanding the unit, to which these men belonged, naturally objected to having this important section away from the remainder of his battalion, they were brought back.

Later in the day the ship was moved from the quay-side into the harbour.

On August 29, at about 3 p.m., the convoy, of which the "Edavana" was a unit, sailed, but just before this the 120 sheep, taken off on the 28th, were reembarked.

After a few days Aden was reached and later Suez; here all troops disembarked and entrained for Cairo; so far the health of the troops had been good, few men reporting sick, such cases as did occur being chiefly malaria.

Four days were spent at Cairo, and on September 18 the two battalions reentrained, embarking the same day on the "Edavana" at Alexandria.

On September 16, two men of the Connaught Rangers were sent to hospital for "neuritis." No more cases occurred until the 20th, when there were three more, followed by two more cases on the 21st.

These five cases were sent to hospital on arrival at Marseilles on the 26th.

A fresh case occurred on the 27th, 2 on the 28th, 3 on the 29th and 2 on the 30th.

In October, 2 cases occurred on the 4th, 2 on the 5th, 1 on the 7th and 1 on the 8th, the latter being one of the two sent to hospital on the 5th who had been returned to duty. After the 8th there were no fresh cases, twenty-three having occurred altogether.

The chief symptoms complained of were weakness of the legs, with swelling and ordinary tenderness on pressure and pain in the leg and thigh muscles; in some cases there were also swelling of the face, loss of sensation in the affected parts and loss of knee jerks.

On examination only one man had anything abnormal as regards his heart, though all had some degree of dyspnœa on exertion.

The urine in every case was normal. None of the cases in the Connaught Rangers showed very severe symptoms, and no cases occurred in the Manchester Regiment, until after landing at Marseilles.
It occurred to me after four or five similar cases had appeared that these were possibly beriberi, but as I had had no experience of this disease whilst in India, I asked the opinions of others who had seen cases. The ship's doctor said that in his opinion the cases were not beriberi, this opinion was also expressed by the Chaplain of the Connaught Rangers (the Revd. Father F. Peal, S.J.), and by the Assistant Surgeon of the battalion (Mr. Poll, I.S.M.D.); as all three had had experience of beriberi and said that these cases in their opinion were not this disease, the men were sent to hospital simply diagnosed as "neuritis," and it was not until some months later that I received a letter from Captain Walker, Master of the "Edavana," in which he stated that he had been asked why he had landed cases of beriberi at Marseilles, without notifying the Port Authorities of the matter.

I recently met Captain Seaver, at the Royal Army Medical College, and asked him if he could give me any notes concerning the cases which occurred in the Manchesters and he very kindly gave me the following:

"Condition first noticed in the Manchesters on marching into camp after disembarkation, several men falling out in the first half mile. These men complained of great pain and weakness in the legs and inability to march. From this date, September 26 until October 17, men continued to report sick, suffering from one or more of the undermentioned symptoms: weakness in the legs; pain in the thigh and leg muscles on exertion; also tenderness on pressure; oedema of the ankles; absence of knee-jerks; dyspnœa on exertion, this was marked in some cases, as was cardiac dilatation with a mitral systolic murmur. Some cases appeared anaemic; there was no pyrexia."

In all twelve men were sent to hospital with neuritis. Some of these men had rejoined the regiment by December 9, but I distinctly remember that nearly all these men were totally unfit for work, and had to be sent back to hospital almost at once."

I have no particulars as to the Companies in the Manchesters, in which these cases occurred, but in the Connaught Rangers, A Company had 8; B Company 3; C Company 4; D Company 8.

As regards the order in which these cases occurred, C Company had the first case on September 16, the sequence of cases being as follows: A Company, 4, 6, 8, 10, 13, 14, 18, 22; B Company, 15, 19, 21; C Company, 1, 5, 7, 17; D Company, 2, 3, 9, 11, 12, 16, 20, 23.

Regarding the later history of these cases in the battalion, on referring to my records, I find that 1 case admitted on October 5, 1914, was readmitted to hospital for neuritis on October 8, 1914; 1 for oedema on May 25, 1915; 1 for varicose veins on June 10, 1915; 1 for pneumonia on February 5, 1915; 1 for myalgia on November 5, 1914; 1 for fever N.Y.D. on February 27, 1915; 1 for venereal sores on September 27, 1914, readmitted for syphilis on January 14, 1915; 1 was killed in action on May 28, 1915; 1 was wounded on November 23, 1914, and 3 on April 26, 1915; 1 being missing on April 26, 1915. None of the others had returned to the battalion up to March 11, 1916, when 1 was wounded and sent home to England; nor am I able to say how long the men who were killed or wounded had been with the battalion after rejoining. In any case 50 per cent did not return, but may, of course, have gone to other units.

The cases were of interest, as both the battalions had been doing duty in the
Punjaub prior to the war; there was no record of any case prior to embarkation, nor were there any cases amongst the crew or S. and T. Corps natives on the "Edavana."

The voyage from Karachi to Marseilles took just one month, with a four days' break at Cairo. The men were exercised as far as possible during the voyage, and had the usual rations. Conditions which might have led to the onset of the disease were overcrowding, with a hot steamy atmosphere due to "swabbing" between decks, especially in the Red Sea, and presumably some error of diet.

It would prove of interest if other officers, having had similar experiences, would send in their notes.

A CASE OF PARATYPHOID A FEVER.

**By Major G. H. DIVE, D.S.O.**

*Royal Army Medical Corps.*

And a Note by Lieutenant-Colonel J. C. Kennedy.

*Royal Army Medical Corps.*

The following case is briefly described both in illustration of certain diagnostic points, and also in view of its possible bearing on certain cases of fever of uncertain origin.

The patient, a healthy adult, aged 32 years, who had been inoculated with the mixed T.A.B. vaccine in 1916, 1917 and 1918, left Mesopotamia early in June, 1921, and touched at Aden and Suez *en route* for the United Kingdom; by the end of the month he developed fever with general pains and malaise. Under quinine this was partially controlled. He was admitted to the Queen Alexandra Military Hospital on July 8, with fever, ranging from 101° to 103°F. every evening, and falling to normal almost every night. No abnormal physical signs were detected, and blood examinations both as regards culture, malaria and agglutination for the typhoid group and the *Micrococcus melitensis* were negative except as stated below.

No organisms were found in the urine, no cysts in the faeces, and all attempts to isolate any of the typhoid group failed.

As regards the general state, extreme weakness was the most marked feature; there was neither diarrhoea nor constipation, and the stools were normal.

On July 11 some doubtful rose spots were noted. The fever continued until August 15, a total period of some seven weeks.

In the absence of clinical data the diagnosis turned on the laboratory findings, in this case a series of agglutinations by Dreyer's method; the results are tabulated below, end points only being given.

<table>
<thead>
<tr>
<th>Date</th>
<th>B, typhos</th>
<th>B, paratyphos A</th>
<th>B, paratyphos B</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.7.21</td>
<td>1 in 125</td>
<td>1 in 25</td>
<td>1 in 450</td>
</tr>
<tr>
<td>18.7.21</td>
<td>1 in 900</td>
<td>1 in 450</td>
<td>1 in 900</td>
</tr>
<tr>
<td>26.7.21</td>
<td>1 in 250</td>
<td>1 in 2,500</td>
<td>1 in 250</td>
</tr>
<tr>
<td>30.8.21</td>
<td>1 in 250</td>
<td>1 in 2,500</td>
<td>1 in 250</td>
</tr>
</tbody>
</table>

If this is reduced to graphic form the variation in the end point of paratyphoid A is very striking.